

WHAT IS CLAIMED IS:

1. A radiation imaging apparatus comprising:
radiation detection means including radiation
detection elements for detecting radiations which
5 have penetrated an object as electric signals, said
elements arranged in a two-dimensional array; and
image display control means for producing a
radiation image of the object detected as the
electric signals with said radiation detection means
10 as continuous images including a plurality of frames,
said image display control means switching a tube
voltage of a radiation source for emitting the
radiations between a voltage at a time of producing a
($2m - 1$)th odd image and another voltage at a time of
15 producing a $2m$ th even image, where m is a natural
number, said image display control means further
controlling a display device to display a processed
image as a dynamic image, the processed image being
obtained by performing a subtraction process between
20 the ($2m - 1$)th odd image and the $2m$ th even image.

2. A radiation imaging apparatus according to
claim 1, wherein said image display control means
performs the subtraction process after performing a
25 gradation conversion process or an edge enhancement
process to the ($2m - 1$)th odd image or the $2m$ th even
image as occasion demands.

3. A radiation imaging apparatus according to claim 1 or 2, wherein said radiation detection elements include wavelength conversion bodies for converting the radiations into visible light and
5 photoelectric conversion elements for converting the visible light converted by said wavelength conversion bodies.

4. A radiation imaging apparatus according to
10 claim 3, wherein said wavelength conversion bodies each include a principal component selected from the group consisting of Gd_2O_2S , Gd_2O_3 , CsI .

5. A radiation imaging apparatus according to
15 claim 3 or 4, wherein said photoelectric conversion elements are MIS type sensors or PIN type sensors, both using amorphous silicon semiconductor.

6. A radiation imaging apparatus according to
20 claim 5, wherein

each of said MIS type sensors is configured to include a first metal thin film formed as a lower part electrode, an insulating layer formed on said first metal thin film layer for obstructing electrons
25 and holes, said insulating layer made from amorphous silicon nitride, a photoelectric conversion layer formed on said insulating layer, said photoelectric

conversion layer made from amorphous silicon hydride,
an N type injection obstruction layer formed on said
photoelectric conversion layer for obstructing
injections of the holes, and a transparent electrode
5 layer formed on said injection obstruction layer as
an upper electrode or a second metal thin film layer
formed on said injection obstruction layer, and

said radiation imaging apparatus supplies an
electric field to each of said MIS type sensors in a
10 direction to lead the holes from said photoelectric
conversion layer to the second metal thin film layer
in a refresh mode, and

said radiation imaging apparatus supplies an
electric field to each of said MIS type sensors in a
15 direction in which the holes generated by the
radiations, which have entered said photoelectric
conversion layer, are stayed at said photoelectric
conversion layer and the electrons are led to said
second metal thin film layer in a photoelectric
20 conversion mode, and further

said radiation imaging apparatus detects the
holes accumulated in said photoelectric conversion
layer in said photoelectric conversion mode or the
electrons led to said second metal thin film layer as
25 light signals.

7. A radiation imaging apparatus according to

claim 1 or 2, wherein

said radiation detection elements are made from a material selected from the group consisting of lead iodide, mercuric iodide, selenium, cadmium telluride, gallium arsenide, gallium phosphide, zinc sulfide and silicon, said material absorbs the radiations to convert the absorbed radiations into the electric signals directly.

10 8. A radiation imaging system comprising:
a radiation source for emitting radiations; and
a radiation imaging apparatus including
radiation detection means having radiation detection
elements for detecting the radiations, which have
15 emitted from said radiation source and have
penetrated an object, as electric signals, said
elements arranged in a two-dimensional array; and
image display control means for producing a radiation
image of the object detected as the electric signals
20 with said radiation detection means as continuous
images including a plurality of frames, said image
display control means switching a tube voltage of
said radiation source for emitting the radiations
between a voltage at a time of producing a $(2m - 1)$ th
25 odd image and another voltage at a time of producing
a $2m$ th even image, where m is a natural number, said
image display control means further controlling a

display device to display a processed image as a dynamic image, the processed image being obtained by performing a subtraction process between the $(2m - 1)$ th odd image and the $2m$ th even image.

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9. A radiation imaging method comprising the steps of:

detecting radiations which have penetrated an object as electric signals using radiation detection
10 elements arranged in a two-dimensional array; and
producing a radiation image of the object detected as the electric signals at the step of detecting radiations as continuous images including a plurality of frames, and switching a tube voltage of
15 a radiation source for emitting the radiations between a voltage at a time of producing a $(2m - 1)$ th odd image and another voltage at a time of producing a $2m$ th even image, where m is a natural number, and further controlling a display device to display a
20 processed image as a dynamic image, the processed image being obtained by performing a subtraction process between the $(2m - 1)$ th odd image and the $2m$ th even image.